

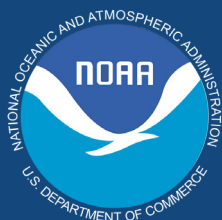
# NOAA Fisheries Service

## Alaska Fisheries Science Center



### Protecting Conserving Managing Marine Resources in Alaska

The Alaska Fisheries Science Center is a scientific research organization responsible for the development and implementation of NOAA's scientific research on marine resources in Alaska waters. Our research focuses on more than 250 fish and 42 marine mammal stocks off the coasts of the Bering Sea, Gulf of Alaska and Aleutian Islands.



National Marine Fisheries Service  
National Oceanic and Atmospheric Administration  
U.S. Department of Commerce

## Spotted Seal

*Phoca largha*

**Length** 1.5 m (5 ft) \*

**Weight** 95.2 kg (210 lbs)\*

**Age** 35 years old\*\*

\*average

\*\*maximum



### Range/Habitat

Spotted seals are found along the continental shelf of the Beaufort, Chukchi, Bering and Okhotsk Seas south to the northern Yellow Sea and western Sea of Japan. In Alaska, they are known to occur as far south as the Pribilof Islands, Bristol Bay and the eastern Aleutian Islands. These seals use sea ice to rest, give birth, and molt. As such, they are sensitive to changes in the environment that affect the timing and extent of sea ice formation and breakup. Spotted seals migrate south from the Chukchi Sea through the Bering Strait in October-November ahead of the advancing sea ice, and overwinter in the Bering Sea in the pack ice over the continental shelf. During spring, they are distributed mainly in the ice front and move to coastal habitats after the sea ice retreats. Spotted seals are often mistaken for north Pacific harbor seals, as the two species look very similar and their geographic ranges overlap in the southern Bering Sea. However, only the spotted seal is regularly associated with pack ice.

### Diet/ Role in Ecosystem

Spotted seals eat a broad spectrum of species; their diet includes walleye pollock, capelin, arctic cod, saffron cod, herring, capelin, crabs, shrimp and octopus.

### Reproduction

Pups are born on the ice in late March and wean 3-6 weeks later.

### Population

Reliable estimates for the current minimum population size, abundance and trend of the Alaska stocks of spotted seals are unavailable. However, there are crude estimates available in the historical literature. The worldwide population of spotted seals was estimated to be 335,000-450,000, with an estimate for the Bering Sea of 200,000-450,000. Aerial surveys conducted by the AFSC in 1992-93 produced a maximum count of 4,145 spotted seals hauled out on the ice in the Bering Sea in spring and along the western Alaska coast during summer. Correcting for the proportion of time that spotted seals haul out (about 6.8%) results in an estimate of 59,214 seals.

### Research

To collect data for estimating the springtime abundances and distributions of ice seals in the Bering Sea, the Alaska Fisheries Science Center (AFSC) has conducted a variety of surveys in 2006 and 2007 from several research ships, with the most complete observations from the USCGC HEALY in 2007. These surveys are done in collaboration with the Alaska Native Village of Kotzebue/Kotzebue IRA and the Alaska Native Ice Seal Committee. For over 2 months, AFSC researchers and Alaska Native participants flew aerial surveys from a helicopter based on the icebreaker throughout the western Bering Sea, while researchers on the NOAA ship OSCAR DYSON captured and instrumented animals with satellite-linked depth recorders (SDRs). SDRs can provide data on an animal's location, and on the timing and depths of its dives. The SDR data were used to provide: 1) haul-out correction factors for future abundance and distribution sightings surveys, 2) information on habitat selection (i.e., foraging and haul-out locations) and seasonal movements, and 3) information on the foraging behavior of these Arctic ice seals.



## Management

The best way to conserve and provide stewardship of marine mammal populations that are critical to the subsistence lifestyle of Alaska Natives is through a full and equal partnership between the federal agency with management authority and Alaska Natives using that resource. The AFSC is responsible for scientific research and stock assessments of ice seals (bearded, ribbon, ringed, and spotted seals) in Alaska, and therefore has expertise and data relevant to many issues of concern of ice seal co-management partners. Recent workshops have resulted in the creation of an ice seal co-management committee consisting solely of representatives of Alaska Native tribes. The AFSC is an active participant in their meetings and is interested in developing a committee where both NMFS and Alaska Natives are equally represented. AFSC staff participates in co-management workshops and meetings to present scientific findings and advice relevant to ice seal ecology and harvest management, and provides financial support for genetic analyses on the stock structure of the four species of ice seals using tissues collected during field research projects.

## Issues

Spotted seals are hunted for subsistence by Alaska Natives. There is significant annual variation in harvest numbers. The effect of the subsistence hunt on spotted seal populations cannot be assessed because there are no current and reliable population dynamics and ecological data. Abundance, population discreteness, annual survival and reproductive rates for spotted seals in Alaska (together with information on food habits, seasonal movements, distribution, and habitat requirements for breeding, foraging, and molting) are poorly known, but are essential to making sound management and conservation decisions. Current knowledge of spotted seal vital rates is insufficient to allow for timely detection of changes in population trends, and assessment of the impact of human activities on seal populations.

Ecological data is particularly important with regard to the potential effects of global warming and the resulting change in Arctic ice habitat. A reduction or change in ice cover would directly affect the survival of spotted seals, as they depend on seasonal ice for breeding and haul-out substrate.

Finally, the interactions with commercial fisheries (both direct, such as entanglement in nets, and indirect, such as competition for resources) are not well known. However, given that there is little overlap between the distribution of commercial fisheries and the distribution of spotted seals, it is possible that commercial fishery impacts may be minor. This may change, however, as fisheries continue to move farther northward.

### For more information

#### Species information

[http://www.afsc.noaa.gov/nmml/species/species\\_spotted.php](http://www.afsc.noaa.gov/nmml/species/species_spotted.php)

#### Research at AFSC:

[http://www.afsc.noaa.gov/nmml/species/species\\_spotted.php#research](http://www.afsc.noaa.gov/nmml/species/species_spotted.php#research)

#### Management:

<http://www.fakr.noaa.gov/protectedresources/seals/ice.htm>

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### Questions or Comments?

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